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TECHNICAL PROBLEMS IN NATIONAL PARK DEVELOPMENT

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OUR national park domain is already something quite unprecedented, something wholly glorious. The National Parks themselves comprise 17 splendid tracts amounting to 6,254,568 acres, including unique and unsurpassable features of landscape beauty. Nothing like this was ever brought under administration before, not even for the great military princes of the world; yet in this case we have a democratic reservation for the delight and the esthetic culture of all the people. Physically and ideally a new standard has been set in the world.

But in every proper sense our American national park system includes, not only the parks specifically so called, but other vast areas of land suitable for public recreation, and expressing in quite eloquent terms the great landscape forms of the North American continent. In other words, we must reckon in the wealth of our landscape equipment, in addition to the National Parks, also the 156 million acres of the National Forests; also some hundreds of thousands of acres of the National Monuments; while to these for many purposes we may further add the Indian reservations.

Still more: State parks and state forests have already been established in considerable numbers, and other important additions in this field may be expected in the coming years. These areas perform the same or a very similar service, and should be included in the general inventory.

In another paper I have tried to indicate some of the general policies which are likely to prevail in the development and administration of so magnificent a domain, but as we come nearer to the problem we see that it involves also a vast preparation of technical equipment, of specialized knowledge, of professional training for this peculiar work. The development and administration of a National Park must certainly prove to be as great and difficult a task as the training of a great symphony orchestra, the development of a modern service library, the making of a national art school, or the management of a state university. It seems self-evident that we shall need men

of large capacity, highly trained for this sort of work. While an enormous amount of specialized technical training will be necessary, it is still more important that such men shall have a broad foundation in the arts and sciences. They must be men of liberal culture in the best sense of that abused word.

In fact the very first technical problem in the development of our national park system lies in the training of a suitable personnel. To some extent a parallel is offered by the work of the National Forest Service. It must not be forgotten that at the time our National Forests were established on their present basis there came into useful activity a number of schools of forestry connected with our stronger universities. These schools gave a highly specialized training in technical forestry; but what was equally important, they inculcated sound ideals of public service. While the management of these National Forests has never been turned over to the graduates of the forest schools, these men have nevertheless exercised a far-reaching influence in that field. It is not too much to say that the genuine success of the Forest Service as a branch of federal administration, achieved in the face of great difficulties, has been due to the high ideals of the men of academic training combined with their thoroughgoing technical preparation.

It is not now necessary to discuss at any great length the character of the professional preparation required by the men who in the future are to administer our National Parks of all sorts. The training already provided for forest rangers and forest supervisors will be useful to many men engaged in park service, whether in national or state parks, or in forests used for recreation. The men who control general policies and administration are the ones who must have a broader training. The education given by the engineering and forestry schools will of course be valuable, but a broader outlook on general economics and sociology, with specialized applications in recreation, will have to be given considerable prominence. It seems to me further that special training in landscape engineering will be possibly most important of all. This, of course, does not refer to the popular idea of landscape gardening, concerning itself with the planting of "ornamental" shrubberies and pretty flower beds. The larger questions of structural design, however, have the utmost importance in their applications to the design and development of large park areas, even where that development consists mainly in letting alone the natural landscape. The well-trained park administrator unquestionably must have a highly developed sense of landscape values.



LAKE JOSEPHINE, MOUNT GOULD, GARDEN WALL, GRINNELL GLACIER.

Such a sense, logically developed and properly disciplined, can come from no other source, so far as I am able to see, except from a broad training in the principles of landscape engineering.

DETERMINATION OF BOUNDARIES

As the various parcels of our great park and forest domain one by one come under the administration of these trained men, other big technical problems emerge. The first of these is the determination of boundaries. Already it has been found that the great Yellowstone, the first of our National Parks, in spite of its liberal conception, fails to include such vitally important areas as Jackson's Hole, which now plainly ought to be a part of this park. We may expect that in a majority of cases a careful technical examination of the situation will show that boundaries of nearly all parks will need to be rectified. This will mean not only the acquisition of areas left outside, but also in many cases the recession of other areas originally included, but which on more careful examination can be shown to have more value for other uses. Any one who has had any experience in the study of parks, even on the small scale of the ordinary city park systems, has learned that this determination of boundaries is a highly delicate, difficult and technical matter, and one which requires long study.

LAND CLASSIFICATION

Even before a final decision is reached regarding exterior boundaries, it will be necessary to classify the interior spaces for use. Certain areas will be needed for camping, some for summer colonies, some for playgrounds, some will be reserved for hunting and fishing, others will be game sanctuaries, some will be kept for the protection of natural curiosities, and so on through an almost endless list of special uses. To decide wisely what the needs of the public really are is a great and complicated problem, and one which from the nature of the case will never be ended. To apportion the land wisely to these various needs will require a knowledge of landscape values, of engineering methods, and of administrative problems of much more than amateurish degree. Even in the National Forests where these problems are much simpler, the land classification has occupied many years of study both broad and intensive. Certain it is that these problems of classification must be brought clearly before the men who are to be especially trained for park administration.



TRAIL IN A STATE FOREST.

TRAFFIC CIRCULATION

Park designers generally consider traffic circulation to be the one fundamental problem. It is beyond question of the utmost consequence. Parks are made for the delight of human beings, and human beings to enjoy the parks must circulate through them. The routes of circulation can be located in such a way as to reach all the scenes of greatest charm, or they can be so laid out as to miss all the best things and to present the visitor with a thoroughly mediocre picture of the entire park. At the Grand Canyon in Arizona, for example, a clear majority of the visitors get only one view of the Canyon, namely, that from the hotel El Tovar. The principal line of circulation lies westward nine miles along the Hermit Rim Drive, disclosing additional views of the Canyon below. Only a part of those who visit the Canyon go as far as this. A still smaller percentage take the Bright Angel Trail trip to the bottom of the Canyon, thus multiplying by ten-fold their knowledge of this unparalleled scenic wonder. A very much smaller percentage of Grand Canyon visitors cover what is known as the Tonto Loop, including the beautiful Hermit Creek Trail. While this round trip of 25 or 30 miles is far beyond the experience of

the ordinary Canyon visitor, it still reveals hardly more than a minor fraction of the Canyon glories. Miles and miles of trail will be necessary eventually to lead visitors into all parts of the Canyon, and to give them anything like an adequate experience of the place. The study of such a system of circulation is an engineering problem of the highest order, but a problem which requires a combination of engineering skill with a knowledge of landscape values.

TRAIL DESIGN AND CONSTRUCTION

A general plan of traffic circulation once determined, it becomes necessary to locate and construct the trails in detail. These may be automobile roads, carriage drives, mule trails or foot paths. The general principles of design involved are the same in either case. I have tried to state this problem and to outline the technical methods of its solution in my recent book on "The Natural Style in Landscape Gardening." At the present time it may be sufficient to point out that the artistic method involves the same procedure as prose composition. A definite landscape theme is adopted, and this theme is exclusively presented along a considerable section of trail. As in prose, so in landscape engineering, the theme is developed by paragraphs. The whole length of the trail is divided into sections, and each one of these presents some definite aspect of the theme in hand. Such paragraphs must have a logical se-



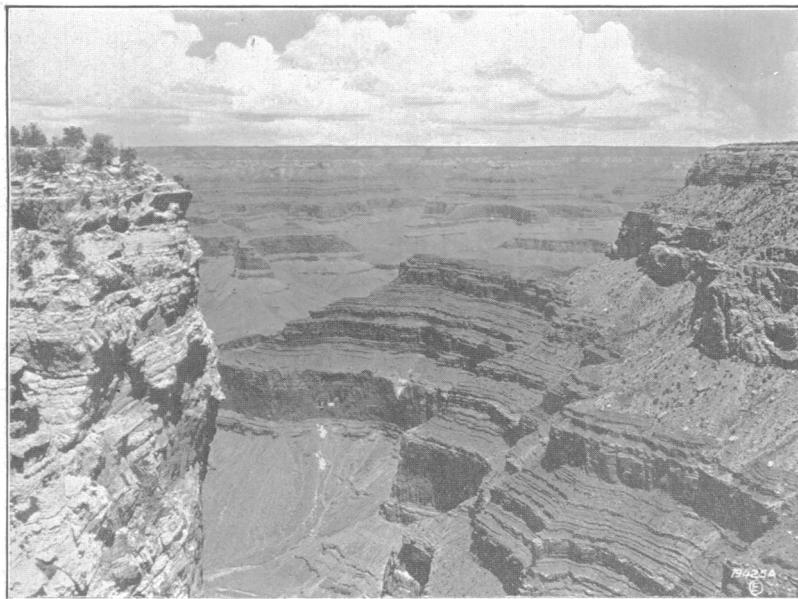
TYPICAL FOREST, YELLOW PINE COUNTRY. This particular section has been set aside for purposes of recreation.

quence. There must be a definite statement of the theme in the first paragraph, there must be a varying treatment in successive paragraphs, running from grave to gay, from coquettish glimpses to broad expository views, and leading to something like a climax toward the end.

We are here in touch with the more technical problems of landscape engineering, but we are dealing with matters which plainly may have a very wide and useful application in the development of those great areas of natural landscape which constitute our National Parks and National Forests.

GENERAL CONSTRUCTION

All kinds of playgrounds, camps, summer colonies, etc., will have to be laid out on various park and forest areas, and their



GRAND CANYON OF THE COLORADO, from Hermit River Road, Arizona.

location and design also involve intricate technical problems. A camp has to be protected in sanitary ways; a water supply has to be provided which is beyond the suspicion of contamination; some adjustment has to be made relative to several kinds of public service. These are largely the questions which come up in city planning and civic design generally. They are pretty well understood; and especially in the schools of landscape architecture men have already been trained for such work. In

the National Parks and Forests we shall fitly have a new application of the old principles. The problems will be infinitely varied and infinitely interesting.

MAINTENANCE

Park superintendents experienced in the management of city park systems have learned to distinguish clearly between park design, construction and maintenance, and to organize their labors accordingly. Park maintenance indeed has come to be a sort of profession by itself. The importance and the intensive character of this work may be surmised from the fact that the average cost of city park maintenance throughout the country is well over \$100 an acre a year. On our millions of acres of national park and forest lands a much lower rate of maintenance will be adopted, necessarily and properly; but the complex and highly technical quality of the problems involved will appear none the less. Such questions as the cost of lawn mowing, the application of dust layers on roads, the transplanting of trees, the breeding of wild-fowl, the protection of fish, the use of preservative solutions on fence posts, the policing of camps, guarding against fires, the operation of telephone lines, keeping ice clean for skating, and a thousand other practical matters will require attention. In this field thorough training and practical experience must be added to considerable natural aptitude to produce a park officer of high efficiency.

It is all of a piece with our greatest American problem, how to secure real efficiency in our public service while at the same time avoiding the deadly blight of bureaucracy. Everywhere we need trained men. We need to get away from the tempting idea that any free-born American can ex-officio do anything. We have taken a good many things out of the hands of grafting politicians and turned them over to willing amateurs, thereby gaining much. If now we can make the next move and place our public business in the hands of men highly trained in technical ways (always with high ideals of public service) we shall be gaining even more. In the park service which is to be we may realize these noble possibilities relatively soon, since the need is so obvious and the way so plain.